

## WHAT IS CLAIMED IS:

1. A method for stabilizing the temperature of optically active components, comprising the steps of:
  - determining the input power of the energy interacting with the optically active component for deflecting a light beam, and
  - switching to a non-deflecting energy interacting with the optically active component and thereby maintaining the average input power at a constant level.
2. The method as defined in Claim 1, characterized in that the energy that interacts with the optically active component is kept at least largely constant.
3. The method as defined in Claim 1, characterized in that the energy that interacts with the optically active component is varied.
4. The method as defined in Claim 1, characterized in that a temperature sensor is provide with to the optically active component.
5. The method as defined in Claim 1, characterized in that the measurement of the temperature of the optically active component is accomplished by way of the latter's optical properties, preceded by suitable calibration measurements for the purpose.
6. The method as defined in Claim 1, characterized in that the optically active component is a acoustooptical component, and the energy interacting with the acoustooptical component is the drive energy.
7. The method as defined in Claim 1, characterized in that the optically active component in a electrooptical component and the energy interacting with the electrooptical component is electrical energy.

8. An apparatus for stabilizing the temperature of an optically active component comprises:
- means for determining the input power of the energy interacting with the optically active component, and
  - means for switching to a non-deflecting energy interacting with the optically active component and thereby maintaining the average input power at a constant level.
9. The apparatus as defined in Claim 8, characterized in that the optically active component consists essentially of a dichroic beam splitter, an acoustooptical tunable filter (AOTF), an acoustooptical beam splitter (AOBS), an acoustooptical modulator (AOM), an acoustooptical deflector (AOD), or an electrooptical modulator (EOM).
10. The apparatus as defined in Claim 8, characterized in that the optically active component provides one wavelength of a light beam for further use.
11. The apparatus as defined in Claim 8, characterized in that the optically active component modifies the intensity of the light beam.
12. The apparatus as defined in Claim 8, characterized in that the optically active component deflects at least one light beam.
13. The apparatus as defined in Claim 12, characterized in that an interruption of the light beam is accomplished with a beam interruption system arranged after the optically active component, for example in the form of a shutter.
14. The apparatus as defined in Claim 8, characterized in that a temperature sensor being attached to the optically active component.

15. A scanning microscope, comprising:
  - a light source defining a light beam,
  - a dichroic beam splitter for directing the light beam to a scanning device and via a optical system to a specimen
- 5     • an optically active component being arranged in the path of the light beam,
- means for determining the input power of the energy interacting with the optically active component, and
- means for switching to a non-deflecting energy interacting with the optically active component and thereby maintaining the average input power at a constant
- 10    level.
16. The scanning microscope as defined in Claim 15, characterized in that the optically active component consists essentially of a dichroic beam splitter, an acoustooptical tunable filter (AOTF), an acoustooptical beam splitter (AOBS),
- 15    an acoustooptical modulator (AOM), an acoustooptical deflector (AOD), or an electrooptical modulator (EOM).
17. The scanning microscope as defined in Claim 15, characterized in that the optically active component provides one wavelength to be coupled into or out of
- 20    the scanning microscope.
18. The scanning microscope as defined in Claim 15, characterized in that the optically active component modifies the intensity of the light beam to be coupled into or out of the scanning microscope.
- 25    19. The scanning microscope as defined in Claim 15, characterized in that the optically active component deflects at least one light beam.

20. The scanning microscope as defined in Claim 15, characterized in that the optically active component is adjustable so that the influencing of the light beam is thereby effective selectively on light of at least one wavelength and/or on light in at least one polarization state.
21. The scanning microscope as defined in Claim 15, characterized in that the influencing of the light beam is synchronized with a measurement operation and/or illumination operation of the scanning microscope.
22. The scanning microscope as defined in Claim 21, characterized in that the optically active component is impinged upon by the interaction energy even when no measurement operation and/or illumination operation is being accomplished with the scanning microscope.
23. The apparatus as defined in Claim 22, characterized in that in order to couple in a specific wavelength of the light beam, the AOBS or AOTF is impinged upon by a frequency of the drive energy that corresponds to the wavelength that is to be coupled in.
24. The apparatus as defined in Claim 22, characterized in that if no light is being coupled in, the AOBS or AOTF is nevertheless impinged upon by a frequency of the drive energy that does not correspond to any of the available light wavelengths.
25. The apparatus as defined in Claim 22, characterized in that the AOBS or AOTF is impinged upon by a frequency of the drive energy that corresponds to none of the light wavelengths being used for scanning with the confocal scanning microscope.
26. The apparatus as defined in Claim 22, characterized in that the light that is not coupled in is absorbed with the aid of a beam trap.

27. The apparatus as defined in Claim 15, characterized in that an interruption of the light beam is accomplished with a beam interruption system arranged after optically active the component, for example in the form of a shutter.

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28. The apparatus as defined in Claim 15, characterized in that a temperature sensor being attached to the optically active component.

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